ATTACHMENT A

newma
NORTHEASTERN WEIGHTS & MEASURES ASSOCIATION

CONNECTICUT
MAINE
MASSACHUSETTS
NEW HAMPSHIRE
NEW JERSEY
NEW YORK
PENNSYLVANIA
RHODE ISLAND
VERMONT
PUERTO RICO

NEWMA SUB-COMMITTEE - SAFETY IN THE WORKPLACE QUESTIONNAIRE

1) Does your jurisdiction have formalized training procedures or manuals as part of regular inspector orientation? YES ( ) NO ( )

IF YES, could I get a copy of them? YES ( ) NO ( )

2) Have any outside agencies ever addressed your inspectors as a group concerning safety procedures specifically related to weights and measures tasks (e.g. static electricity, handling of combustibles, fire safety, proper lifting techniques, etc.?)

IF YES, which procedures _____

_____

_____

3) What, if any, types of safety equipment are routinely issued to inspectors? For instance,

SPECIAL GLOVES FOR LPG TESTS	( )	AIR FILTERS	( )
HARDHATS	( )	SAFETY SHOES	( )
EAR PROTECTION	( )	FACEMASKS	( )
GLOVES FOR FOOD HANDLING	( )		

Anything else that is designed to protect the inspector, the public or the vendor during the course of a weights and measures inspection? PLEASE EXPLAIN

_____

_____

4) Have your inspectors ever been tested while they were performing weights and measures tasks to assess any risks involved in the performance of those tasks?

YES ( ) NO ( )

IF YES, what were the results and/or recommendations, if any, of the tests?

_____

_____

ATTACHMENT A

5) Has safety been a consideration in the types of vehicles used by your weights and measures inspectors? YES ( ) NO ( )

IF YES:

Standard vehicles modified for safety reasons:

Vapor evacuation	( )	Barriers	( )
Separate compartments	( )	Tie-downs	( )
Other	( )		

Special types of vehicles:

Driver's area separate from equipment storage area	( )
Vans	( )
Pickups	( )
Other	( )

6) In your jurisdiction, have any weights and measures inspectors been injured "on the job" while performing duties specifically related to weights and measures work? YES ( ) NO ( )

IF NOT, are you aware of any accidents in other jurisdictions? _____

_____

_____

7) In your opinion, which routine weights and measures duty is the most hazardous, to the inspector or any other person who might be involved in the inspection? Please consider both the immediate or short-term effects as well as long-term and cumulative effects.

_____

_____

_____

_____

8) Do you have any suggestions as to decreasing risks and increasing safety awareness "on the job" for a weights and measures official?

_____

_____

_____

YOUR NAME: _____

JURISDICTION: _____

Please return to:

CHARLES A. GARDNER, DIRECTOR
SUFFOLK COUNTY WEIGHTS & MEASURES
COUNTY CENTER, NORTH COMPLEX
VETERANS MEMORIAL HIGHWAY
HAUPPAUGE, NEW YORK 11788
Tel: (516) 360-4621

SUMMARY OF QUESTIONNAIRE RETURNS AS OF 1/8/89

There have been 50 responses received from 39 different jurisdictions. The results of those responses are as follows:

1) Does your jurisdiction have formalized training procedures or manuals as part of regular inspector orientation?

YES 9 NO 30

2) Have any outside agencies ever addressed your inspectors as a group concerning safety procedures specifically related to weights and measures tasks (e.g., static electricity, handling of combustibles, fire safety, proper lifting techniques, etc.)?

YES 12 NO 27

Of the 12 who responded in the affirmative, the procedures that were mentioned were as follows:

NEWMA Conference - training
New York State Training School
Right To Know program
Fire safety training/Handling of combustibles (8)
LPG Association training (2)
NBS representatives re: LPG training
Defensive driving (2)
OSHA movie
Demonstration of proper lifting techniques (3)
Static electricity (4)
Stopping of vehicles in transit
Poor air quality environments

3) What, if any, types of safety equipment are routinely issued to inspectors?

14 jurisdictions responded "none."

The following safety equipment was checked off or mentioned as being routinely issued:

Hardhats (20)
Air filters (4)
Safety cones (5)
Safety shoes (13)
Facemasks (5)
Gloves (13)- used for LPG, food handling, pesticides, gasoline, chemicals
Non-static uniforms
LPG test area marked and separated
Separate special building for axle-load weighers

3) (cont.)

Static lines
"1203" decals for gasoline-carrying vehicles
Eyewash bottles (3)
Ear protection (3)
Safety glasses (5)
Red vests for gasoline (2)
Coveralls (4)
Raingear (2)
Fire extinguishers (5)
First aid kits (3)
Flare kits
White lab coats
Funnels with brass spouts

4) Have your inspectors ever been tested while they were performing weights and measures tasks to assess any risks involved in the performance of those tasks?

YES 11 NO 28

Of the 11 affirmative responses, the following Results or Recommendations were mentioned:

Purchase and use hardhats, air filters, safety shoes and facemasks
Negative results on gasoline fumes
Negative results on using chemicals in lead-test kits
Above acceptable benzene limits while testing gasoline
Above exposure limits for benzene
Provide full facepiece organic vapor respirator
Provide safety shoes with conductive rubber soles
Establish a medical surveillance program at no expense to exposed employees
Provide vehicles where equipment is secured and stored separate from passenger compartment (trunks of cars not acceptable)
Use of 25-lb weights instead of 50-lb weights
Inadequate ventilation

5) Has safety been a consideration in the types of vehicles used by your weights and measures inspectors?

YES 21 NO 18

Of the 21 affirmative responses, considerations mentioned were:

Vapor evacuation (12)
Barriers (8)
Tie downs (10)
Separate compartments (11)
Vans (9)

5) (cont.)

Driver's area separate (13)
Pickups (16)
Air conditioning
Non-skid walkways on trucks
Gasoline provers are not allowed in cars

6) In your jurisdiction, have any weights and measures inspectors been injured "on the job" while performing duties which were specifically related to weights and measures work?

YES 23 NO 16

Several were aware of others, the most common injuries cited being back injuries, slips on oil or gas spills, or slips while working around milk tanks.

7) In your opinion, which routine weights and measures duty is the most hazardous, to the inspector or any other person who might be involved in the inspection? Please consider both the immediate or short-term effects as well as the long-term and cumulative effects.

Gasoline testing (36)
Oil meters (21)
LPG (12)
Truck scales (9)
Carrying 50-lb weights (4)
Hostile vendors (3)
Pesticides/herbicides (2)
Hopper scales (2)
Handling chemicals (2)
Tank gauging
Lead exposure
Hanging scales
Overhead track scales
Meat hook scales
Platform scales
Transporting gas samples
Bulk milk tanks - combination of water, steel, milk
Avoiding moving vehicles while checking gas pumps

8) Do you have any suggestions as to decreasing risks and increasing safety awareness "on the job" for a weights and measures official?

Training materials should be distributed to all officials (3)
Training from outside agencies (3)
Safety courses with refresher training (6)
National training program - video tapes (2)
Training in handling hazardous fuels (4)
Weights & Measures supervisors must recognize hazards (2)
Safety handbooks/guidelines (2)
Driver's training (2)
Training module on Safety
Separate compartments on vehicles used for gasoline testing (2)

8) (cont.)

Warning stickers on inspector's equipment as reminders
NEWMA should be involved in training
Always wear steel-tipped shoes
Require safety shoes or boots
Keep all equipment tied down in vehicles
OSHA training
Videos on Safety
Training in proper lifting techniques
Proper safety equipment should be issued
Work in pairs
Exchange of information between jurisdictions
Gloves and respirators should be standard
Awareness of environment in work area

While the number of inspectors who answered the questionnaire and the number of jurisdictions represented by the answers are only a small percentage of the totals for the country, I believe that the answers received do show a need for a coordinated training program on at least a regional base, if not a national one. I received quite a few phone calls from others who did not send in returns but did have important information to add. I feel that there is an eagerness to learn much more about safety on the job. I also detected a feeling of frustration and, in some cases, bitterness and cynicism from people who feel that their needs have been neglected.

Some amazing results, to me anyway, were that 14 jurisdictions said there was no safety equipment of any kind issued and that 30 jurisdictions claimed that there were no formalized training procedures. Also, there were various types of safety equipment mentioned as being routinely issued, yet no one particular place mentioned even half of all the different protections. The point is, I believe that almost all of the safety items listed should probably be standard equipment in every jurisdiction. Many of the items are relatively inexpensive. For the ones that are a little more money I say, "If you think it's expensive to protect and prevent, try paying for the results of a liability suit."

The Conference can help by using its influence and expertise from a national perspective. We have to get OSHA to help, we need cooperation from various State Labor Departments, we have to create an awareness of the potential of the weights and measures work force. The coordination and exchange of information necessary could not be accomplished better by any other group than the National Conference. Regardless of costs, entrenched procedures, difficulties with supervising authorites, etc. our weights and measures community deserves an enlightened, aware and safe workplace.

ATTACHMENT B

NATIONAL CONFERENCE ON WEIGHTS AND MEASURES

1990 - The 75th Anniversary of the Annual Meeting

FRED A. GERK
CHAIRMAN
DIVISION OF STANDARDS & CONSUMER SERVICES
NM DEPT. OF AGRICULTURE
P.O. BOX 30005, DEPT. 3170
LAS CRUCES, NM 88003-0005
PHONE: 505-646-1616

ALBERT D. THOLEN
EXECUTIVE SECRETARY
P.O. BOX 4025
GAITHERSBURG, MARYLAND 20885
PHONE: 301-975-4009

August 7, 1989

Charles A. Gardner
Director, Weights and Measures
Suffolk County Consumer Affairs
County Center/N, Building 340
Hauppauge, NY 11788

Dear Charlie:

I am pleased to appoint you to the newly established Task Force on Safety as well as to serve as the Chairman of the Task Force. This appointment will continue to be in effect until the work of the Task Force is completed or unless you find it necessary to discontinue serving on the Task Force.

Your appointment is especially appropriate because of your interest in the subject and leadership in bringing its importance to the Northeastern Association on Weights and Measures and, subsequently, to the National Conference. It is becoming increasingly evident that the inspector must be trained to do his or her job in the safest manner possible. Safety must be of prime concern and attention. The job assigned to the Task Force is potentially difficult and massive. I am asking you and your members to give early and special attention to defining the goals and work plan for the Task Force, and to submit your proposals to the Executive Committee at the Interim Meetings in January, 1990.

Again, thanks for accepting this challenging assignment. Please let the Executive Secretary or me know of any needs you have for support in this major undertaking.

Sincerely

Fred A. Gerk
Chairman

ATTACHMENT C

James A. Graham
Commissioner

North Carolina
Department of Agriculture
Standards Division

N. David Smith
Director

September 19, 1989

TO: All Metrologists

FROM: L.F. Eason
NCWM Task Force on Safety

Fred Gerk, the Chairman of the National Conference on Weights and Measures, has established a Task Force on Safety to examine the safety needs of the weights and measures work force. I have been appointed to the Task Force as a representative of the metrologists of the NCWM. I hope to provide the Task Force with an analysis of safety problems found in our laboratories and a list of solutions. Our areas of concern include:

1. Laboratory safety policies presently in effect
2. Safety gear and clothing in use or available
3. Safety training and education programs
4. Accidents that have occurred during laboratory tests
5. Adaptations of standard laboratory equipment for safety reasons
6. Changes in laboratory policies or procedures dictated by safety concerns
7. Any actions taken by federal, state, or local OSHA groups relating to laboratory functions

Please send me any information on the above issues that you can provide as soon as possible. I understand that several laboratories have very good safety training programs already in effect and I especially look forward to hearing about these. If your laboratory has experienced safety problems, hopefully a solution has or can be worked out to prevent the same thing from happening in other laboratories.

To echo the expectations of the Task Force Chairman, Charles Gardner of Suffolk County, New York, I believe that the success of this Task Force will be one of the most beneficial and worthwhile tasks that the National Conference on Weights and Measures has ever attempted. Thank you for your assistance.

Post Office Box 27647, Raleigh North Carolina, 27611 - (919) 733-3313

ATTACHMENT D

NATIONAL CONFERENCE ON WEIGHTS AND MEASURES

1990 - The 75th Anniversary of the Annual Meeting

FRED A. GERK
CHAIRMAN
DIVISION OF STANDARDS & CONSUMER SERVICES
NM DEPT. OF AGRICULTURE
P.O. BOX 30005, DEPT. 3170
LAS CRUCES, NM 88003-0005
PHONE: 505-646-1616

ALBERT D. THOLEN
EXECUTIVE SECRETARY
P.O. BOX 4025
GAITHERSBURG, MARYLAND 20885
PHONE: 301-975-4009

February 28, 1990

MEMORANDUM FOR Member Directors Weights and Measures

From: Tina G. Butcher TGB
Technical Advisor, Task Force on Safety

Subject: Task Force on Safety
Request for Safety Information

INFORMATION REQUESTED BY: April 13, 1990

Background

The National Conference on Weights and Measures (NCWM) Task Force on Safety was established to study the issue of safety in the weights and measures work place and to make recommendations to the NCWM of ways in which safety can be incorporated into the everyday activities of the weights and measures community. The Task Force held its first meeting during the NCWM Interim Meetings in Scottsdale, Arizona, January 14-18, 1990. The Task Force established its objectives and identified a number of tasks to be achieved in order to accomplish those objectives. A major objective is to establish a "safety library."

A great deal of information about safety in the work place has been gathered by Task Force members and a great deal more information is available from sources such as the American Petroleum Institute (API), the National Propane Gas Association (NPGA), the Occupational Safety and Health Association (OSHA), the Consumer Product Safety Commission (CPSC), and industry groups. The Task Force believes that this information might be useful to weights and measures jurisdictions in establishing their own safety programs and can assist the weights and measures community in developing safe work habits. By categorizing the information that is available and making it accessible to jurisdictions along with a list of expert contacts, the Task Force hopes to ease the burden of beginning a safety program from scratch as well as to provide an additional source of information for those jurisdictions with safety programs already in place.

The Task Force will organize the information which has been gathered into a "library" of safety information. A list of the information will be developed as the material is collected and will contain the title, a brief summary, the source, and the number of pages of each piece of information. The list will be divided into main subject categories with subcategories according to the type of inspection to which it applies. For example, a list of respirators which are suitable for use when testing petroleum products would be catalogued under the main category of "Safety Equipment and Clothing" and under the subcategory of "Gasoline." A preliminary list of the main categories is as follows:

I) Safety Philosophies and Good Work Practices

II) Safety Programs Already in Place

III) Safety Training and Education

IV) Safety Gear and Clothing

V) Suitability of Vehicles for Weights and Measures Functions

VI) Results of Tests To Establish Exposure Levels to Toxic Substances

VII) Adaptation of Weights and Measures Equipment to Reduce Safety Risks

VIII) Accidents During Weights and Measures Testing

IX) Changes to Policies and Procedures to Address Safety Concerns

X) Actions Taken by Federal, State, or Local OSHA Groups Relating to Weights and Measures Activities

XI) Miscellaneous Safety Information

The Task Force will review the listing of information at its next meeting to determine if any revisions to the list of categories is required and will continue to develop the safety library as it proceeds with its work. The Task Force plans to maintain this "library" of safety information at the National Institute of Standards and Technology (NIST). A listing of information in the safety library will be distributed to NCWM member directors along with instructions on how to obtain the information when the list has been further developed and the information has been catalogued.

The Task Force also recognizes the importance of including information about means that inspectors have devised to address a particular safety concern in one of their everyday activities and about accidents which have occurred; issues such as these serve to provide examples of how some jurisdictions have responded to hazardous situations.

Request for Assistance from State and Local Jurisdictions

The Task Force is seeking safety information which might be added to the safety library or which might assist the Task Force in its work in addressing the concern of safety in the weights and measures work place. The information can be anything from a description of a safety program used by a jurisdiction to a description of the procedures and/or equipment used to address a specific safety concern.

If your jurisdiction can provide the Task Force with safety information in any of the categories identified above, please contact Tina Butcher by telephone at (301) 975-2196 or in writing at National Institute of Standards and Technology, Bldg. 101, Room A 617, Gaithersburg, Maryland 20899.

The Task Force will hold its next meeting in April 1990 and plans to review the information gathered at that time. Any information that can be provided to the Task Force before April 13, 1990 will be greatly appreciated.

NATIONAL CONFERENCE ON WEIGHTS AND MEASURES

N. DAVID SMITH
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GAITHERSBURG, MARYLAND 20885
PHONE: 301-975-4009
FAX: 301-926-0647

October 26, 1990

Mr. Al Abadir
Supervisor Division of Safety Engineers
Directorate of Technical Support
200 Constitution Avenue, NW
Washington, DC 20210

Dear Mr. Abadir:

This letter is in reference to our meeting with members of the National Conference on Weights and Measures (NCWM) Task Force on Safety and the NCWM Committee on Liaison on Monday, July 10, 1990. The NCWM Task Force on Safety requested this meeting in order to solicit assistance from OSHA in its work on safety in the weights and measures workplace. On behalf of the Task Force on Safety, I want to thank you for taking time from your schedule to meet with us and also for arranging a tour of the Occupational Health and Safety Technical Data Center.

During the meeting, it was agreed that additional background material would be provided to OSHA concerning the work of the Task Force along with a list of areas in which the Task Force is requesting assistance from OSHA. A brief synopsis of the goals and work of the Task Force is enclosed in response to this request; the synopsis provides background information on the relationship between the National Institute of Standards and Technology (NIST) and NCWM, the establishment of the Task Force, an outline of the goals of the Task Force, and a listing of the areas in which the Task Force is seeking assistance from OSHA.

Several pieces of literature are enclosed to provide you with additional information about the work of the NCWM; included are NCWM Publication 12 ("Examination Procedure Outlines for Weighing and Measuring Devices"), NCWM Publication 6, (The NCWM, Its Organization, Procedures, and Membership Opportunities), and NIST Handbooks 44, 133, and 145. In addition to these publications, I have enclosed the meeting summary from the January 1990 meeting of the Task Force.

The Task Force is holding its next meeting on November 13-14, 1990 at NIST in Gaithersburg, Maryland. An agenda for that meeting is enclosed for your information. If you or any other representative of OSHA would like to attend this meeting, the Task Force would welcome your participation.

I hope that this will provide your agency with sufficient information in order to determine if there are areas in which OSHA can provide the Task Force with assistance. If you require additional clarification or would like

to arrange another meeting with members of the Task Force, please contact me by telephone at (301) 975-2196 or in writing at the address above.

Sincerely,

Tina G. Butcher
Physical Scientist
Office of Weights and Measures

Enclosures

cc: NCWM Task Force on Safety
NCWM Liaison Committee Technical Advisor, Karl Newell

ATTACHMENT E

National Conference on Weights and Measures
Task Force on Safety
Background Information, Objectives, and Request for Assistance

National Institute of Standards and Technology (NIST) and National Conference on Weights and Measures (NCWM)

– Relationship and Interaction

One of the primary responsibilities of the Office of Weights and Measures of the National Institute of Standards and Technology (NIST – formerly the National Bureau of Standards) is to sponsor the National Conference on Weights and Measures (NCWM) in order to promote uniformity among the States in weights and measures laws and regulations and methods of inspection. Members of the NCWM include State and local weights and measures officials, other officials of federal, state, and local governments, and representatives of manufacturers, industry, business, and consumer organizations.

NIST is not a regulatory agency; regulation of weighing and measuring equipment and of packaged commodities is performed by State and local government officials. In addition to coordinating the NCWM, the NIST Office of Weights and Measures provides technical support and guidance to these State and local jurisdictions. Technical, legal, and general recommendations in the field of weights and measures regulation are developed through the NCWM. NIST Handbooks 44, 130 and 133 (see enclosed brochures) are updated annually as a result of the annual meeting of the NCWM. Most States follow rule-making procedures and adopt the most current versions of these handbooks as their codes and regulations.

Another program administered by the NIST Office of Weights and Measures is the National Training Program (NTP). The primary goal of the NTEP is to provide training to weights and measures regulatory officials and to promote uniform enforcement of weights and measures requirements. The NTP has established a number of training "modules", each addressing a particular weights and measures inspection activity. For example, Module Number 21 provides information on the inspection and testing of Liquefied Petroleum Gas Liquid-Measuring Devices. Training modules are presented to weights and measures officials and industry representatives in regional training schools across the United States.

National Conference on Weights and Measures Publication 12 (Pub. 12) includes examination procedures outlines (EPO's) for the inspection and testing of weighing and measuring equipment. The EPO's found in NCWM Publication 12 are used by weights and measures officials in the United States to inspect and test commercial weighing and measuring equipment such as scales, retail motor-fuel dispensers, liquefied petroleum gas liquid meters, and vehicle mounted tank meters. The EPO's reference requirements specified in NIST Handbook 44 for commercial weighing and measuring equipment and provide the inspector with an outline of the inspection and testing procedures required to complete an official examination of a weighing or measuring device. At the present time, there are sixteen EPO's covering some of the most basic weights and measures inspection activities.

NIST Handbook 145 provides documentation of good laboratory practices (GLP's), good measurement practices (GMP's), and standard operating procedures (SOP's) to be used in operation of a quality measurement assurance program. The GLP's, GMP's and SOP's found in NIST Handbook 145 are used by State metrologists in the daily performance of their work.

Task Force on Safety – Overview

Periodically the NCWM will establish a task force to study a particular issue which is of concern to the weights and measures community. After studying the issue, the task force makes specific recommendations to the

NCWM concerning the issue and how it should be addressed by the weights and measures community. Such a task force is typically established to address a particular need of the NCWM members; the goals of each task force are developed to best serve the needs of the NCWM members.

The Task Force on Safety was established during the NCWM 1989-1990 membership year. The Task Force held its first meeting in January 1990 and held a second meeting in April 1990. Its primary goal was to study the issue of safety in the weights and measures workplace and to make recommendations to the NCWM concerning the implementation of safety programs in weights and measures jurisdictions.

Many weights and measures jurisdictions have little or no formal safety program while other jurisdictions already have safety programs in place. The Task Force is working toward providing information concerning safety in the weights and measures workplace which can assist a jurisdiction in establishing a safety program as well as providing information which can be used in the improvement of existing programs.

Objectives of the Task Force

During its January and April meetings the Task Force established its objectives and identified specific activities to accomplish its goals. The primary goal of the Task Force is to raise the level of safety consciousness in the weights and measures workplace. Specific objectives to accomplish this goal are as follows:

1) Update each Examination Procedure Outline (EPO) found in NCWM Publication 12 (EPO's for Weighing and Measuring Devices) to include basic safety information.

2) Incorporate safety information into the training modules of the National Training Program (NTP).

3) Make additions to National Institute of Standards and Technology (NIST) Handbook 145 to include safety information for the metrology laboratories in the Standard Operating Procedures (SOP's)

4) Establish a library of safety information.

5) Establish a NCWM Subcommittee on Safety when the Task Force is disbanded and encourage similar subcommittees at the regional level.

6) Develop a separate publication detailing the work of the Task Force upon completion of its work.

Request for Assistance from OSHA

(1) **Revision of the EPO's in NCWM Publication 12**

During its first two meetings, the Task Force was able to identify some basic areas of safety; however, the Task Force recognized the need to consult experts in the area of workplace safety in order that safety concerns would not be overlooked. The areas in which the Task Force needs assistance is in its work in the revision of the Examination Procedure Outlines (EPO's) of NCWM Publication 12 and the Standard Operating Procedures (SOP's) of NIST Handbook 145.

At its last meeting, the Task Force reviewed the EPO's in Publication 12 and identified areas of safety to be highlighted in each EPO. The Task Force is currently working on incorporating this information

into each EPO and plans to review the EPO's at its next meeting. One member of the Task Force is preparing information pertaining to the SOP's. After its final review of the revised EPO's and SOP's, the Task Force would like to seek the assistance of OSHA in reviewing the EPO's and SOP's to determine if the safety information added is complete, and whether or not additional information should be added.

(2) **Field Audit of Weights and Measures Inspection Activities**

The Task Force would like to explore the possibility of arranging for field audits by OSHA representative of routine inspections of weighing and measuring equipment. For such an audit an OSHA representative and a member of the Task Force might observe the inspection of a vehicle scale; during the inspection the OSHA representative might identify areas of safety concerns that the Task Force had overlooked in its review of the EPO's.

The Task Force is not familiar with the intricacies of OSHA requirements; however, it does recognize that certain requirements may conflict at different levels of authority (e.g., State vs. local). The recommendations of the Task Force as a result will be very general for that reason and due to the fact that circumstances differ between weights and measures jurisdictions. The Task Force intends to indicate in any documents that it produces that weights and measures officials must be aware of specific local requirements that may conflict with information presented by the Task Force.

ATTACHMENT F

NIST | UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899

February 5, 1991

Mr. Al Abadir
Supervisor Division of Safety Engineers
Directorate of Technical Support
200 Constitution Avenue, NW
Washington, DC 20210

Dear Mr. Abadir:

I am writing to request the assistance of the Occupational Safety and Health Administration (OSHA) in reviewing a document prepared by the National Conference on Weights and Measures (NCWM) Task Force on Safety.

The NCWM Task Force on Safety is studying the issue of safety in the weights and measures workplace. I am including with this letter a brief overview explaining the objectives of the Task Force and the relationship of the NCWM to the National Institute of Standards and Technology (NIST).

The NCWM Task Force on Safety met in November 1990 at the National Institute of Standards and Technology in Gaithersburg, Maryland to review the examination procedure outlines (EPO's) contained in NCWM Publication 12. These EPO's are used in the inspection and testing of weighing and measuring equipment by weights and measures officials across the United States. Mr. MacArthur Cheeks, OSHA, attended this meeting and was very helpful to the Task Force in its work on the EPO's.

Revisions have been made to the EPO's based on the discussions during the November meeting. A glossary of the key phrases used in the EPO's has been assembled and will be included at the back of NCWM Publication 12. The Task Force has also developed an introductory section on safety which will be included at the beginning of Publication 12.

The Task Force recognizes the need to contact experts in the area of workplace safety to assure that safety concerns are not overlooked in the EPO's. The Task Force is requesting assistance from OSHA in reviewing the revised EPO's. Enclosed are copies of the revised EPO's, the introductory section on safety, and the glossary of key terms for your review. The Task Force would appreciate any comments which representatives of OSHA may have concerning areas of safety which have been neglected or incorrectly addressed in the EPO's.

I will be working in another division of NIST on a temporary assignment for the next eight months. During my absence, Ms. Joan Mindte of our office will be working with the Task Force. If you should have any questions concerning this information or the work of the Task Force, please contact her at (301) 975-4003.

The Task Force plans to hold a meeting on April 7-8, 1991 at the Compri Hotel in Gaithersburg, Maryland. The Task Force plans to prepare a final report on its work at that meeting and to discuss any additional revisions which must be made to the EPO's. If you or a member of your staff would like to attend the meeting, your participation would be welcome.

Once again, thank you for the assistance which OSHA has provided to the NCWM Task Force on Safety.

Sincerely,

Tina G. Butcher
Physical Scientist
Office of Weights and Measures

Enclosures: Task Force Background and Objectives
Revised EPO's
Introduction for Publication 12 on Safety
Glossary of Key Phrases

cc: Mr. MacArthur Cheeks, OSHA
Task Force on Safety Members

U.S. Department of Labor

Occupational Safety and Health Administration
Washington, D.C. 20210

Reply to the Attention of:

MAR 29 1991

Ms. Joan Mindte
United States Department Of Commerce
National Institute of Standards
and Technology
Gaithersburg, Maryland 20899

Dear Ms. Mindte:

This is in response to your letter of February 5, to Mr. Abadir of my staff, in which you requested that the Occupational Safety and Health Administration (OSHA) review the examination procedure outlines (EPO) contained in the National Conference on Weights and Measures (NCWM) Publication 12.

Your EPOs contain general guidelines for safety. These guidelines are useful in alerting the NCWM inspectors to the importance of taking adequate precautions to avoid personal injuries. The observance of such guidelines appears to be left up to the judgement of the individual inspector. This could be effective only if inspectors receive training in hazard recognition and controls.

Since weights and measures equipment varies in design, and the safety of their use may be affected by other factors in the workplace, we will not be able to provide comments applicable to specific circumstances. However, we have some recommendations for your consideration:

(a) Conduct a job hazard analysis.

Information regarding actual job conditions should be used to identify potential hazards.

(b) Determine what safety and health training is needed.

As a results of the job hazard analysis, areas where training is necessary for the NCWM inspectors can be identified.

(c) Determine the control (administrative, engineering and personal protective) method needed.

The Material Safety Data Sheets and the job hazard analysis should be helpful in the proper selection of personal protective equipment and reduction of exposure time. If engineering controls are utilized on a site, lesser measures of protective equipment and administrative controls may be needed.

(d) Provide a written safety and health program.

An effective method for emphasizing safety and health is to have a written program as exemplified in your document. We recommend that it would be made available to all inspectors for pre-inspection planning

Thank you for your concerns regarding safety and health hazard issues. If you have further questions, please do not hesitate to contact Mr. Abadir at (202) 523-7056.

Sincerely,

Stephen Mallett for T.J.

Thomas J. Shepich
Director
Directorate of Technical support

April 4, 1991

MEMORANDUM

NORTH CAROLINA DEPARTMENT OF AGRICULTURE

TO: Georgia Harris

FROM: L.F. Eason, NCWM Task Force on Safety

SUBJECT: Recommendation For Safety Revisions for NIST Metrology Handbooks

You will find attached my recommendations for revisions to NIST handbooks 143 and 145. Hopefully these revisions can initially take the form of addendums to the existing handbooks (as we discussed in November 1990) since neither is due for immediate revision. The wording is heavily plagiarized from the wording being suggested for incorporation into the NCWM Examination Procedure Outlines (EPO's) for weights and measures devices.

In the case of Handbook 145, I agree that the eventual full revision should follow the ASTM format. This format would include an opening section on safety preceding the GLP section (this is what I have drafted as an addendum), a paragraph on safety at the beginning of each procedure, and notes throughout the procedure as needed. Until that full review can be completed, I have attempted compile a listing of the major general metrology laboratory hazards into my proposal for a section 4.1 that can be added to HB 145, preceding the good laboratory practices.

Please review and let me know what else is needed. Thank you.

ATTACHMENT H

METROLOGY LABORATORY SAFETY
NIST Handbook 143

Appendix D, Section 9

Safety is mentioned briefly in the sample Quality Assurance Program (appendix D). This should be renumbered as section 2 to emphasize its importance and should be expanded. A suggestion for rewording is printed below.

2. Safety

Safe working conditions are prerequisite to good laboratory practices. All laboratory personnel are fully instructed in safe practices. These include, but are not limited to:

Safe lifting practices
Proper chemical hygiene procedures
Sight and hearing protection
Safe equipment operation (including power and hand tools)
Equipment maintenance for safety
Fire hazard safety

Management/supervisors make sure that these are followed. Management provides safe working conditions with emphasis on supplying and maintaining equipment to limit all identifiable hazards and complies with all local, state, and federal regulations in this respect.

Section 3.4.6

In accordance with the above change, section 3.4.6 should be renumbered to 3.4.3 and the wording should be changed from "should address" to "must address".

Appendix C Section III C

It should at least be recommended that cranes be equipped with overload sensing devices.

Appendix C Section III G

It should be recommended that safety shoes are provided and required when working with weights over 20 lbs. Also, a hood should be required if lead is to be melted for weight seals. A hood is mentioned briefly and generically under Section III F, but should also be listed specifically here.

Appendix C Section III I

An acid resistant hood with proper air flow, a safety shower and eyewash, a chemical burn station, and an acid neutralizing drain should be required in the small volume laboratory since acid cleaning of small volumetric glassware is recommended. A hood is mentioned briefly and generically under Section III F, but should also be listed specifically here.

Appendix C Section III J

"An elevated area..." should be reworded to "an elevated area with proper safety railing and kick boards...".

Appendix C Section III K

A generic section should be added to verify that a laboratory has adequate safety equipment. Suggested wording would be, "Laboratory has adequate safety equipment necessary to ensure a safe environment for both workers and visitors."

Appendix C

Finally, sections need to be added to verify the existence of a Chemical Hygiene Plan, Right to Know Program, and Hazard Communication Program as now required by Federal OSHA. These should either be incorporated in section IV or added as a new section between IV and V.

METROLOGY LABORATORY SAFETY
NIST Handbook 145

4. Good Laboratory Practices (GLP's)

A general, introductory safety chapter needs to be added to this section of the handbook. It should be introductory to all of the GLP's as section 4.1 titled "Laboratory Safety". This would be an easy addendum to Handbook 145 (requiring only the insertion of these pages and changing a page of the table of contents) until its actual full revision. The eventual revision of the document should incorporate a safety section at the beginning of each SOP and GLP along with additional warnings within the procedures where needed. My suggestion for the wording of this addendum is attached. Again, I have plagiarized heavily from the wording the Task Force on Safety is proposing for the EPO's.

4.1

Laboratory Safety

The importance of safety in the metrology laboratory cannot be overemphasized. During the inspection, preparation, and testing of measurement standards and measuring devices, the issue of safety must be foremost in the metrologist's mind. It is only through conscientious adherence to safety regulations and policies on a regular basis that the metrologist can decrease the likelihood of causing serious personal injury, injury to other individuals in the laboratory, or damage to property and equipment. Safety-consciousness must also extend to the selection and maintenance of testing equipment, tools, and other equipment used by the metrologist.

Before proceeding with the inspection and testing of any measurement standard or measuring device, the metrologist should be completely familiar with all safety regulations and policies in effect that are related to the test to be performed. Such regulations and policies include state, federal, or local Occupational Safety and Health Administration (OSHA) regulations, safety instructions provided by the manufacturer of the devices being used or tested, safety policies established by the metrologist's employer, and any other applicable safety guidelines. Also, if the inspection or test is being performed outside of the laboratory, the metrologist must be familiar with the safety policies established by the firm in which the inspection is taking place.

The Standard Operations Procedures (SOP's) and Good Laboratory Practices (GLP's) described in this document address a wide variety of test procedures performed in the metrology laboratory. Each of these procedures require knowledge of safety information specific to the device being tested, the equipment being used to test it, the tools being used to adjust it, and the nature of any chemicals used during the test. The metrologist must be aware of each of the hazards involved with the particular test, piece of equipment, or tool being used. Since the equipment and procedures being used vary from laboratory to laboratory, it is impossible to cover all safety concerns for each test procedure. The following steps should be completed by each laboratory:

(a) Conduct a job hazard analysis for each test procedure. These should attempt to anticipate and address all hazards involved with each step of all laboratory test procedures.

(b) Determine what safety and health training is needed based on the results of each job hazard analysis listed above.

(c) Determine the hazard control (administrative, engineering, and personal protective) methods needed. The Material Safety Data Sheets and the job hazard analysis should be used to determine the personal protective equipment needed. When possible, engineering controls should be utilized to reduce the amount of personal protective equipment and administrative controls needed.

(d) Provide a written safety and health program which should be made available to all laboratory personnel.

The following key phrases are listed to serve as reminders to the metrologist to practice safety as a routine part of their work. These safety reminders are <u>not</u> intended to include all possible safety precautions which should be taken before proceeding with the inspection of a measurement standard or measuring device, but hopefully, they highlight many that are common in the laboratory.

Chemicals, Petroleum Products, and Hazardous Materials -

Be familiar with the nature of the chemicals being used in the laboratory. It is essential that the metrologist be familiar with the nature of the product and any protective measures which should be

taken prior to working with the product. For example, some products may cause injury through exposure to the skin (acids and caustics) or through inhalation of the fumes or airborne particulates (molten lead fumes, lead dust, and mercury vapors). Similarly, caustic products may also damage field standard weights or measures or equipment used in the test process.

Determine whether or not protective clothing or equipment is needed prior to working with the product. Material Safety Data Sheets (MSDS's) can provide much of the basic information about the hazards involved with a product. The manufacturer of the product should be able to provide further information about the product. Look for leakage or spillage of chemicals, petroleum products, or hazardous materials. Leakage or spillage of these products can be potentially hazardous if the metrologist is exposed to the product and is not wearing personal protective equipment. Additionally, any product collecting on the ground surface can result in slippery, unsafe conditions for an individual moving about the inspection area. If leaking or spilled product results in unsafe conditions at the inspection site, it is recommended that the testing procedure be discontinued until the unsafe conditions are corrected.

Clothing -

Synthetic clothing should not be worn when working around flammable products. Synthetic clothing melts at high temperatures; if the person wearing the synthetic clothing is exposed to flames, the clothing may melt and stick to the persons skin to result in severe burns.

Combustion can result when an ignition source is present and fuel and oxygen are also available. Many types of synthetic clothing also tend to build up a static charge; this can be dangerous as a potential ignition source around flammable products.

Use caution when wearing loose clothing (or hanging jewelry) around machinery such as conveyor belts, weight movers, meat hooks, gears, etc. The clothing (or jewelry) may become entangled in the machinery and result in personal injury.

Electrical Hazards -

Be particularly aware of potential electrical hazards in the laboratory when using electronic devices or working in the vicinity of electrical equipment. Loose or exposed wiring and a frayed or worn electrical cord should be brought to the attention of management. Avoid standing on wet surfaces unless the electrical equipment is properly insulated and grounded.

Combustion can result when an ignition source is present and fuel and oxygen are also available. Electrical hazards may also be potential ignition sources when working with flammable products. Be sure that flammable chemicals are isolated from sources of electrical ignition. Also verify that provers and other test equipment are equipped with explosion-proof motors. Always check the electrical supply lines and extension cords of testing equipment carefully for signs of wear or damage and proper capacity. Correct any potentially hazardous conditions and take steps to protect these supply lines from damage during use.

Emergency Procedures -

Always be familiar with emergency procedures <u>BEFORE</u> beginning an inspection. After an emergency has developed, crucial time can be lost if emergency procedures are not known. Be familiar with the procedures to follow in the event of an equipment malfunction or the development of a dangerous

situation with the equipment or in the vicinity of the inspection site when operating specialized testing equipment.

Be familiar with the nature of any chemical product being used in or near the inspection area. Know the emergency procedures to be followed when a spill has occurred or a person has been exposed to the product. Knowledge of emergency procedures and related information should include the correct selection and use of fire extinguishers, the location of emergency shut-offs, and evacuation procedures.

Keep a list of emergency phone numbers handy at all times in a notebook or on a card. Examples of numbers to keep are the local fire department, emergency medical facility, and other appropriate public safety agencies.

Eye Protection -

Appropriate eye protection is recommended when working around hazardous products which may inadvertently splash into the eyes, and eye-wash facilities should be considered. Contact lens wearers should be particularly careful to follow the instructions of their eye-care practitioner and local OSHA representative when working around hazardous products.

Appropriate eye protection should also be worn when working in an area with overhead projections such as meat hooks or other sharp objects or where there is a potential of flying projectiles (e.g., when working near tools that grind, chip, etc.).

First Aid Kits -

Appropriate first aid kits should be located throughout the laboratory in highly visible locations. All laboratory personnel should be familiar with the location and contents of each of these kits. Consideration should be given to the type of work that the metrologist typically performs and the types of hazards typically encountered in these types of activities. Items in addition to those contained in a basic first aid kit may need to be added to address the potential hazards which may be encountered by the metrologist who will be most likely to use the first aid kit.

First Aid Training -

An adequate number of laboratory personnel should be trained and certified in first aid procedures (including Cardiopulmonary Resuscitation - CPR) to assure that any accident victim will receive proper first aid treatment. This certification should be maintained through periodic training as recommended by each program.

Fire Extinguisher -

Know the proper use and selection of fire extinguishers for a given application. Contact your local fire department for current information and training.

Ignition Sources -

Combustion can result when an ignition source is present and fuel and oxygen are also available. It is necessary to avoid possible sources of ignition when using flammable chemicals or petroleum products. Possible sources of ignition include, but are not limited to: open flames or smoking, metal to metal contact which causes sparking (e.g., metal wrench or hammer on a pipe fitting), a running motor, static discharge, worn or faulty electrical wiring, improper grounding, and the wearing of synthetic

clothing. Also be sure that provers and other test equipment are equipped with explosion-proof motors. If ignition sources cannot be eliminated at the time of the inspection, it is recommended that the testing procedure be discontinued until the hazardous conditions are corrected.

Because disposable lighters can spark upon impact, the metrologist should avoid carrying a lighter.

Lifting -

Be familiar with and use proper lifting techniques when lifting test weights or heavy equipment to prevent personal injury. To reduce the possibility of back injury, use equipment which would decrease the amount of lifting required whenever possible (For example: carts for transporting weights, a forklift or pallet jack to move weights, elevated pallets to store weights, an extended height funnel, etc.).

Periodic training in proper lifting techniques is encouraged.

Location -

Carefully examine the inspection site prior to beginning an inspection and testing procedure. Look for potentially dangerous situations such as wet areas which may be slippery (see also **Wet/Slick Conditions**), the use or presence of hazardous and/or flammable materials and any spillage or leakage of these products (see also **Chemicals, Petroleum Products, and Hazardous Materials**), adjacent activities which may contribute a potential hazard to the inspection (e.g., welding near the inspection area would provide a potential eyesight hazard and an ignition source when using flammable liquids), obstructions in the area which may prove to be safety hazards (e.g. objects in the path of the metrologist to and from the device being tested, exits blocked by test equipment or vehicles, etc. -- see also **Obstructions**), pedestrian or vehicle traffic, steep or narrow stairways, overhead hazards (e.g., crane hooks, low-hanging water pipes or beams in large volume testing areas, overhead activities, low doorways, etc. -- see also **Overhead Hazards**), lack of or defective handrails, and loose or exposed wiring (see also **Electrical Hazards**). Use great care when moving around and working in areas in which these potential hazards are present. When using flammable products, note the location of the nearest fire extinguisher prior to beginning the inspection.

Material Safety Data Sheets (MSDS) -

MSDS's are provided by the manufacturer of a product to identify the product's basic characteristics and hazardous information. MSDS's typically provide information pertaining to the characteristics of a product such as hazardous ingredients, physical data, fire and explosion hazard information, health hazard information, reactivity data, spill or leak procedures, special protection information, special precautions, toxicological information, and other relevant information. MSDS's can be obtained from the manufacturer of the product. For further information on MSDS's, contact your local OSHA office.

Nature of Product -

Be knowledgeable about the nature of any chemical product being used or normally dispensed by a device to be tested prior to beginning a test. Even if the device does not have any of the product in it, the residual amounts of the product remaining on the device may pose a hazard. For all hazardous materials it is recommended that a copy of the Material Safety Data Sheet (MSDS) be obtained for that product and reviewed prior to use or testing the device. Carefully read and follow the

instructions on any warning labels posted on the device or affixed to a packaged product for precautions which should be taken when working around the product.

Obstructions -

Care should be taken to avoid injury from obstructions in the work area during the course of an inspection. Obstructions which might prove to be safety hazards include objects in the path of the metrologist to and from the device being tested, steep or narrow stairways, exits blocked by test equipment or vehicles, etc.

Overhead Hazards -

Note any overhead hazards such as crane hooks, low-hanging water pipes or beams in large volume testing areas, overhead activities, and low doorways prior to the inspection. Take precautions (such as wearing a hard hat) to avoid potential injuries as the situation dictates.

Personal Protection Equipment -

Included among the many types of personal protection equipment which are available are items such as non-synthetic clothing, coveralls, gloves, barrier cream, non-permeable safety aprons, safety sleeves, safety shoes, respirators, goggles or safety glasses, hearing protection, and hard hats. OSHA or safety clothing and equipment manufacturers can provide additional information concerning the selection of personal protection equipment for a given type of inspection activity.

Before providing personal protection equipment (PPE), management should determine whether or not PPE is actually required for a particular inspection activity. If it is determined that an employee is exposed to a hazard, the management should first try to minimize the hazard by examining and modifying work methods and conditions. If it is determined that the employee is still exposed to the hazard after modifying work methods and conditions, consideration should be given to purchasing PPE. It should be realized that certain types of PPE such as respirators can require employee physicals and extensive ongoing training and maintenance; failure to follow these requirements may render the PPE ineffective or even dangerous.

Safety Shoes -

Safety shoes are recommended to be worn when lifting heavy objects (test weights, five gallon test measures, etc) or in areas where heavy equipment or objects may fall, injuring the metrologist's feet. Many styles and types of safety shoes are available. The American National Standards Institute and safety shoe manufacturers can provide additional information concerning the selection of safety shoes for different types of laboratory activities.

Safety Cones/Warning Signs -

Safety warning signs or safety cones should be positioned to block off the work area when the inspection site is exposed to vehicular or pedestrian traffic. These precautions should also be taken when working around flammable liquids to warn people of a potential hazard; in this instance, it is also recommended that "No Smoking" and "No Open Flame" signs be posted.

Static Discharge -

Combustion can result when an ignition source is present and fuel and oxygen are also available. Sources of static discharge introduce the potential of an ignition source into the testing area. Avoid all sources of static discharge when testing flammable products.

Wet/Slick Conditions -

Caution should be exercised when working in wet, slippery, or icy conditions to avoid slipping or possible injury from electrical sources. Shoes with non-skid soles should be worn to provide adequate traction to prevent slipping.

Absorbent material should be used to clean up any liquid spills to prevent possible injury due to slipping on a slick surface.

Once again, this list is not intended to be a complete listing of safety hazards in the laboratory. The metrologist must be alert to all possible safety hazards. Many safety policies and regulations will vary from jurisdiction to jurisdiction. Therefore, it is also essential that the metrologist be aware of and adhere to all safety regulations and policies that are in place.

ATTACHMENT I

SAFETY CONSIDERATIONS

NOTE: *When excerpting an Examination Procedure Outline for duplication, this section and the "Glossary" located in the back of this publication should also be duplicated and included with the outline.*

The importance of safety in the weights and measures workplace cannot be overemphasized. During the inspection and testing of weighing and measuring equipment, the issue of safety should be foremost in the inspector's or serviceperson's mind. It is only through conscientious adherence to safety regulations and policies on a regular basis that the inspector or serviceperson can decrease the likelihood of causing serious personal injury, injury to individuals in and around the inspection area, or damage to property and equipment. Safety-consciousness must also extend to the selection and maintenance of testing equipment and other equipment used by an inspector or serviceperson.

Weighing and measuring equipment varies in design, and the safety of its use may be affected by other factors in the workplace. Because of this variability, it is impractical to make specific recommendations that will identify or address safety hazards that may be present in a particular jurisdiction. In order to properly address the safety hazards that may be present during an inspection activity, a jurisdiction should consider the following steps in working to minimize the hazards: (1) Conduct a job hazard analysis; (2) Determine what safety and health training is needed; (3) Determine the control (administrative, engineering, and personal protective) needed; and (4) Provide a written safety and health program.

Before proceeding with the inspection and testing of a weighing or measuring device, the inspector or serviceperson should be completely familiar with all safety regulations and policies in effect at the inspection location. Such regulations and policies include state, federal, or local Occupational Safety and Health Administration (OSHA) regulations, safety policies established by the firm in which the inspection is taking place, and safety policies established by the inspector's or serviceperson's employer or any other applicable safety guidelines.

The Examination Procedure Outlines (EPO's) in this publication address a wide variety of activities involving the inspection and testing of various types of weighing and measuring equipment; each of these inspection activities require knowledge of safety information specific to the inspection of that device. At the beginning of each EPO a brief paragraph is included to remind the inspector or serviceperson of some of the basic safety precautions which should be taken prior to proceeding with the inspection procedure. In addition to the basic safety reminder at the beginning of each EPO, safety reminders are included at various points throughout the body of the EPO. The safety reminders use "key phrases" to prompt the inspector or serviceperson to remember particular safety precautions. A glossary of these key phrases is included at the back of this publication. The glossary provides a brief explanation of the intent of the safety precaution and in some cases provides a listing of a

source or sources where additional information might be obtained pertaining to a particular safety concern.

The safety reminders included in this publication are not intended to include all possible safety precautions which should be taken before proceeding with the inspection of a weighing or measuring device. (Similarly, the safety information and contacts are not a complete listing of all possible sources of information and guidance in the area of safety.) The safety reminders are intended to raise the awareness of the weights and measures inspector or serviceperson and to serve as a reminder to make safety an integral part of all inspection and testing procedures. The National Conference on Weights and Measures hopes that the safety reminders will also encourage the inspector or serviceperson to thoroughly investigate the safety requirements in effect at an inspection site and to identify and practice the safety procedures necessary to prevent personal injury, injury to others, or damage to equipment and property during the inspection.

For additional information on safety in the weights and measures workplace and the development of a safety program, see the July 1991 Final Report of the NCWM Task Force on Safety.

Many policies and regulations will vary from jurisdiction to jurisdiction. It is essential that the inspector or serviceperson be aware of all safety regulations and policies in place at the inspection site and to practice the safety policies established by the inspector's or serviceperson's employer. The safety reminders included in the EPO's contain general guidelines for safety. These guidelines are useful in alerting inspectors and servicepersons to the importance of taking adequate precautions to avoid personal injuries. These guidelines can only be effective in mitigating safety hazards if inspectors and servicepersons receive training in hazard recognition and controls.